

**REMARKS**

Claims 1, 5, 12, 17 and 22 have been amended. Claims 1-22 remain in the application. Reexamination and reconsideration of the application, as amended, are respectfully requested.

In accordance with the Examiner's suggestion, for grammatical reasons claim 17 has been amended to remove the word "an" from the phrase "at least one an add wavelength" (sic) in line 8 of the claim.

In accordance with the Examiner's suggestion, for grammatical reasons claim 22 has been amended to add the word "to" before the phrase "select and recombine" in line 2 of the claim.

Claims 1-7, 9-16, 18, 21, and 22 were rejected under 35 U.S.C. 103(a) as being unpatentable over Shirasaki in view of Kessler. Claims 8, 17, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirasaki in view of Kessler as applied to claims 6 or 12, respectively, and further in view of Taga.

These rejections are respectfully traversed with respect to claims 1-22, as amended.

The present invention, as defined by the amended claims, is directed to a wavelength division multiplexing add-drop multiplexer system using an optical tapped delay line. The system comprises a number of elements in combination. For example, in representative claim 1, as amended, the system comprises a processor to process at least one collimated input beam to produce discrete multiple time-delayed output beams that interfere at a plane. The discrete multiple time-delayed output beams are mutually phase-shifted as a function of the frequency of the input beam and are spatially distributed such that each of the discrete multiple time-delayed output beams occupies a different region. The input beam is channelized into constituent frequencies at the plane. The system also comprises a subsystem to drop at least one wavelength from the collimated input beam or to add at least one wavelength to the collimated input beam after the input beam has been channelized.

The claims have been further amended to recite that each of the discrete multiple time-delayed output beams is individually weightable in complex amplitude. Support for this recitation is found in the present application in at least the following sections of the application, as originally filed. Paragraph 22 of the application states that the present invention "combines an .. OTDL ... with a subsystem to perform the adding or dropping ...". Paragraph 39 of the application states that

the "partial reflectivity of the second surface coating 120 is spatially varying." Paragraph 43 of the application states that "This reflection or 'bounce' produces a collimated output beam that preferably exits at a second location or tap 122(b). Tap 122(b) may be displaced spatially from the first tap 122(a)." Paragraph 45 of the application states "The various beams remain substantially collimated throughout the reflective process. Divergence of the beams and interference among the beams is minimized. Numerous internal reflections within the cavity 112 may be achieved without substantial divergence or interference." Figure 5 shows the distinctness of the output beams. These disclosures, taken together, describe "independently weightable amplitude" of the beams to a person of ordinary skill in the art (see also U.S. Patent 6,608,721, issued August 19, 2003 for "Optical Tapped Delay Line").

A similar combination of elements is neither disclosed nor suggested in Shirasaki or Kessler, viewed alone or in combination. The Shirasaki and Kessler references are directed to systems for dropping wavelengths. In contrast, the present invention is directed to a system for dropping and/or adding wavelengths. There is no teaching or suggestion in either reference of a system comprising a processor to process a collimated input beam to produce discrete multiple time-delayed output beams that interfere at a plane. There is no teaching or suggestion in either reference of a system in which discrete multiple time-delayed output beams are mutually phase-shifted as a function of the frequency of the input beam and are spatially distributed such that each of the discrete multiple time-delayed output beams occupies a different region.

The fundamental deficiencies with the Shirasaki and Kessler references are not compensated for by the additional reference of Taga. Taga discloses a thin-film type of optical filter (see, for example, Taga's Figure 3). Taga specifically discloses a filter in the form of a glass plate with a coating applied such that one optical wavelength passband will pass through the plate and all other wavelengths will reflect off of the plate. Taga therefore claims a process comprising "passing a specific wavelength of the light signal" and "rejecting ... the other wavelength components."

In contrast to Taga, the present invention may pass/reject any combination of the individual wavelength bands of light. This is because the present invention, in a preferred embodiment, channelizes into the individual wavelength bands and can then handle each one independently.


Claim 5 has been amended to recite a combination comprising at least two mirrors, with at least one of the two mirrors having at least one hole located at the same spatial location as a spatial location corresponding to a target wavelength to be dropped. One example of an embodiment of the invention defined by amended claim 5 is shown in Figure 7 of the present application. A similar embodiment, which uses two mirrors instead of one, and two OTDL channels instead of one, is neither disclosed nor suggested in any of the cited references, viewed alone or in combination. Indeed, the embodiment shown in Figure 7 would be quite difficult to implement using the disclosure of Shirasaki, since Shirasaki discloses a "line-focused" input.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 509622000800.

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